

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Specification at page 5, line 8:

The substrate of the present invention is [suitably] suitable for use in the preparation of a composite membrane for use in a fuel cell. When for use in a fuel cell, the total thickness of the membrane is suitably less than 200µm and preferably less than 100µm.

Specification at page 6, line 11:

2) Perfluorinated or partially fluorinated polymers containing aromatic rings such as those described in WO 95/08581[, WO 95/08581] and WO 97/25369 (Ballard Power Systems) which have been functionalised with SO_3H , PO_2H_2 , PO_3H_2 , $\text{CH}_2\text{PO}_3\text{H}_2$, COOH , OSO_3H , OPO_2H_2 , OPO_3H_2 . Also included are radiation or chemically grafted perfluorinated polymers, in which a perfluorinated carbon chain, for example, PTFE, fluorinated ethylene-propylene (FEP), tetrafluoroethylene-ethylene (ETFE) copolymers, tetrafluoroethylene-perfluoroalkoxy (PFA) copolymers, poly (vinyl fluoride) (PVF) and poly (vinylidene fluoride) (PVDF) is activated by radiation or chemical initiation in the presence of a monomer, such as styrene, which can be functionalised to contain an ion exchange group.

IN THE CLAIMS:

- 1 3. (Amended) A substrate according to claim 1 [or claim 2],
2 wherein the mixed amorphous silica fibres comprise one or more chopped strand(s)
3 of amorphous silica.
- 1 4. (Amended) A substrate according to [any preceding] claim 1,
2 wherein the amorphous silica fibres comprise a mixture of both microfibrils and

3 chopped fibres in the range of from 95:5 % to 5:95 % by weight of the mixture
4 respectively.

1 5. (Amended) A substrate according to claim 4₁ wherein the
2 amorphous silica fibres comprise a mixture of both microfibrs and chopped fibres
3 in the range of from 70:30 % to 30:70 % by weight of the mixture respectively.

1 6. (Amended) A substrate according to [any preceding] claim 1,
2 wherein the fibres have a diameter in the range of from 0.1µm to 50µm.

1 7. (Amended) A substrate according to claim 6₁ wherein the
2 fibres have a diameter in the range of 0.4µm to 9µm.

1 8. (Amended) A substrate according to [any preceding] claim 1,
2 wherein the binder comprises a solution or dispersion of ion-exchange polymeric
3 materials, non-ion-conducting polymers, or inorganic materials or mixtures thereof.

1 9. (Amended) A substrate according to [any preceding] claim 1
2 for use in the preparation of a composite membrane.

1 10. (Amended) A composite membrane comprising a porous
2 substrate of fibres and at least one ion-conducting polymer, characterised in that the
3 substrate [is one according to any preceding claim, which] comprises a porous
4 matrix of mixed amorphous silica fibres bound with a binder.

1 11. (Amended) A composite membrane according to claim 10,
2 which when [tested by the method described herein in the Examples, results in]
3 dried then boiled in water undergoes less than or equal to about ±9 % change in the
4 area.

1 12. (Amended) A composite membrane according to claim 10₁
2 [or claim 11] wherein the total thickness of the membrane is less than 200µm.

1 13. (Amended) A composite membrane according to [any one of
2 claims] claim 10 [to 12] for use in a fuel cell.

1 14. (Amended) A process for the manufacture of a substrate
2 [according to any one of claims 1 to 9], [which process comprises] comprising the
3 steps of

- 4 (a) dispersing [the] mixed amorphous silica fibres in water to
5 form a slurry;
6 (b) depositing the slurry onto a mesh bed to form a network;
7 (c) drying and compacting the fibre network; and
8 (d) applying, before or after step (c), a dispersion of binder.

1 15. (Amended) A process for the manufacture of a membrane
2 [according to any one of claims 10 to 13], [which process comprises] comprising
3 the steps of

- 4 (i) forming a porous substrate [of, preferably randomly
5 orientated individual mixed amorphous silica fibres bound
6 with a binder by a process] according to claim 14; and
7 thereafter,
8 (ii) impregnating the porous substrate with a polymeric material
9 to produce a membrane.

1 17. (Amended) A membrane electrode assembly comprising [a
2 substrate according to any one of claim 1 to 9 and/or] a composite membrane
3 according to [any one of claims] claim 10 [to 13].

1 18. (Amended) A fuel cell comprising [a substrate according to
2 any one of claim 1 to 9 and/or] a composite membrane according to [any one of
3 claims] claim 10 [to 13].

Claim 19 has been added.